

# इंटरनेट

# मानक

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IS 11475 (2002): Stoneware Crockeryware [CHD 9: Ceramicware]



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भारतीय मानक  
स्टोनवेयर क्राकरीवेयर — विशिष्टि  
( दूसरा पुनरीक्षण )

*Indian Standard*  
STONEWARE CROCKERYWARE—SPECIFICATION  
( *Second Revision* )

ICS 81.060.20; 97.040.60

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**BUREAU OF INDIAN STANDARDS**  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

## FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Ceramicware Sectional Committee had been approved by the Chemical Division Council.

This standard was originally published in 1985 and subsequently revised in 1994. In this revision, the limits for release of lead and cadmium have been modified to align with the ISO/DIS 6486-2 : 1999 'Ceramicware, glass-ceramicware and glass dinnerware in contact with food — Release of lead and cadmium — Part 2 : Permissible limit', which incorporates present regulatory requirements of major world bodies, in order to obviate any non-tariff barriers apart from ensuring protection of the population against possible hazards arising from the use of improperly formulated and/or processed crockeryware used for preparation, serving and storage of food and beverages. The various test methods have been given in IS 14179 : 1999 'Methods of test for ceramic tableware' and IS 9806 : 2001 'Methods of test for and permissible limits of toxic materials released from ceramicware, vitreous enamelware, glassware and glass ceramicware in contact with food' (*first revision*).

The composition of the Committee responsible for the preparation of this standard is given in Annex B.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

## *Indian Standard*

# STONEWARE CROCKERYWARE — SPECIFICATION ( *Second Revision* )

## 1 SCOPE

This standard prescribes requirements and methods of sampling and test for stoneware crockeryware.

## 2 REFERENCES

The following Indian Standards contain provisions which, through reference in this text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

<i>IS No.</i>	<i>Title</i>
2781 : 1975	Glossary of terms relating to ceramicware ( <i>first revision</i> )
9806 : 2001	Methods of test for and permissible limits of toxic materials released from ceramicware, vitreous enamelware, glassware and glass ceramicware in contact with food ( <i>first revision</i> )
14179 : 1999	Methods of test for ceramic tableware

## 3 TERMINOLOGY

3.1 For the purpose of this standard, the definitions given in IS 2781, in addition to the following, shall apply.

3.1.1 *Stoneware* — A semi-vitreous ceramicware of fine texture usually covered by a white/coloured glaze and primarily from non-refractory clays (50 percent stone and 50 percent clay).

3.1.2 *Crockeryware* — It shall mean all types of dinnerware, tableware, etc (other than artware) made from earthenware, stoneware, fine (bone) china, porcelain, vitreous china and glassceramic.

## 4 GRADES

4.1 There shall be three grades of stoneware crockeryware, namely, Grade 1, Grade 2 and Grade 3 depending upon their visual assessment ratings (see Annex A).

4.2 The material of all the grades shall also satisfy the requirements prescribed in 5.

## 5 REQUIREMENTS

### 5.1 Material

It shall be a semi-vitreous ceramic material/body, white/coloured, having low porosity, non-translucency and high mechanical strength, single-fired or biscuit at low/high temperature, and covered with a properly matured raw and/or fritted glaze. The glaze shall be of uniform colour, smooth, impervious and as free as possible from visual defects.

### 5.2 Workmanship

#### 5.2.0 General

All items of stoneware crockeryware in a set shall be generally of a matching design, colour and decoration.

5.2.1 The cup shall rest in the middle of the saucer without rocking or spinning.

5.2.2 The handle, where provided, shall not be misplaced.

5.2.3 The lip or spout shall be so designed that liquids may not trickle down from the sides of the ware while pouring.

5.2.4 The lid, where used, shall fit properly and shall not fall down while pouring out liquids.

5.2.5 The capacity of the tea pot/coffee pot in a set shall correspond to the capacity of the cups.

### 5.3 Finish

The entire surface of items of stoneware crockeryware shall be covered by a uniform, continuous, smooth, impervious, and raw and/or fritted glaze except for the resting surface (bottom rim) of the hollow ware which is cleanable and retains this quality. In addition, the resting surface of items other than hollow ware shall be non-abrasive in texture.

5.3.1 The glazed surface shall be even, free from defects, namely, craze, speck, crawling, patches, finger prints and pin holes, and shall comply with the requirements of visual assessment as prescribed in Annex A.

5.3.1.1 The pin hole shall be determined by applying a dye-based fountain pen ink on the surface of the article under test. Allow it to dry. Wipe out the ink from the article with a wet cloth and observe the spot wherever ink stain has remained.

5.4 Warpage

5.4.1 Out-of-roundness

The out-of-roundness of various items of stoneware crockeryware of Grade 1, Grade 2 and Grade 3 shall not exceed the following limits on the nominal diameter when measured in accordance with the method prescribed in 7.1 of IS 14179.

Grade	Limit, percent
1	1.0
2	1.5
3	2.0

5.4.2 Edge-warpage and Slope of Flatware

The edge-warpage and slope of the flatware of Grade 1, Grade 2 and Grade 3 shall not exceed the following limits when measured in accordance with the method prescribed in 7.2 of IS 14179.

Grade	Warpage mm	Slope
1	3.0	4°
2	3.5	4°
3	4.0	4°

5.4.3 Flatness of Dinner Plate

The eating surface of the dinner plate shall be flat within 2 mm total indicator run-out when measured in accordance with the method prescribed in 7.3 of IS 14179.

5.5 Release of Lead and Cadmium (Toxic Elements)

The limit of release of lead (Pb) and cadmium (Cd) extracted from stoneware crockeryware shall not exceed the following limits when tested as prescribed in IS 9806:

Type of Ware	Minimum Number of Specimen	Unit	Lead Limit	Cadmium Limit
Flatware	4	mg/dm <sup>2</sup>	0.8	0.07
Large hollow ware	4	mg/l	1.0 <sup>1</sup>	0.25
Small hollow ware	4	mg/l	2.0	0.50
Cups and Mugs	4	mg/l	0.5	0.25
Storage hollow ware	4	mg/l	0.5	0.25
Cooking-ware	4	mg/l	0.5	0.05

NOTE — Flatware shall constitute a minimum source of lead and cadmium burden from earthen articles. Limits for flatware (lead and cadmium) refer to the value obtained when the individual values of the pieces tested are averaged. All other limits are expressed in absolute maximum values, in that, no individual unit comprising a sample exceeds these levels.

5.6 Thermal Shock Resistance

All items of stoneware crockeryware shall withstand a thermal shock of 120°C for four cycles when tested in accordance with the method prescribed in 13 of IS 14179.

5.7 Water Absorption

The water absorption of the items of the earthenware crockeryware when tested in accordance with the method prescribed in 10 of IS 14179 shall be less than 3 percent.

5.8 Impact Strength and Chipping Resistance

The impact strength and chipping resistance of the various items of stoneware crockeryware when tested in accordance with the method prescribed in 9 of IS 14179 shall be as prescribed below:

Item of Crockeryware	Impact Strength, Min Nm	Chipping Resistance, Min Nm
Cup, mug, sugar pot, milk pot, tea pot, coffee pot and bowl	0.24	—
Flatware	0.28	0.22

5.9 Resistance to Detergents

When tested by the method prescribed in 11 of IS 14179, the test article shall not show any loss of gloss of the glaze when compared with the untested test specimen.

5.10 Resistance to Citric Acid

When tested by the method prescribed in 12 of IS 14179, the test article shall not show any loss of gloss of the glaze when compared with the untested test specimen.

5.11 Crazing Resistance

When tested in accordance with 8 of IS 14179, the articles of the crockeryware shall show no crazing after undergoing five cycles.

6 MARKING AND PACKING

6.1 Marking

Each item of stoneware crockeryware shall be indelibly and legibly marked with its source of manufacture.

6.1.1 In addition to the above, each package shall be marked with the following particulars:

- a) Indication of the source of manufacture;

- b) Description of the items;
- c) Quantity;
- d) Batch number and lot number,
- e) Grade and type;
- f) Decoration quality number, if any; and
- g) Month and year of manufacture.

#### 6.1.2 BIS Certification Marking

The packages may also be marked with the Standard Mark.

6.1.2.1 The use of the Standard Mark is governed by the provision of *Bureau of Indian Standard Act, 1986*

and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

#### 6.2 Packing

The crockeryware shall be packed as agreed to between the purchaser and the supplier.

#### 7 SAMPLING

Representative samples of the stoneware crockeryware shall be drawn in accordance with 4 of IS 14179.

## ANNEX A

(Clauses 4.1 and 5.3.1)

### VISUAL ASSESSMENT FOR GRADING OF STONEWARE CROCKERYWARE

#### A-0 GENERAL

Visual assessment for grading of stoneware crockeryware is done on the basis of the nature, number and distribution of the defects in the final ware in respect of its appearance, finish and decoration as given in Table 1.

#### A-1 ASSESSMENT AND GRADING

A-1.1 Any item of the stoneware crockeryware having not more than 4 defects out of first thirteen

characteristics as described in Table 1 shall be classified as Grade 1.

A-1.2 Any item of the stoneware crockeryware having not more than 6 defects out of first thirteen characteristics as described in Table 1 shall be classified as Grade 2.

A-1.3 Any item of the stoneware crockeryware having not more than 10 defects out of first thirteen characteristics as described in Table 1 shall be classified as Grade 3.



**Table 1 Classification of Defects Stoneware Crockeryware**  
(Clauses A-0, A-1.1, A-1.2 and A-1.3)

SI No. (1)	Characteristics (2)	Grade 1 (3)	Grade 2 (4)	Grade 3 (5)
i)	Pin holes			
	a) Body	2 up to 0.8 mm	3 up to 0.8 mm	4 up to 1.0 mm
	b) Glaze*	10 up to 1.0 mm	15 up to 1.0 mm	20 up to 1.0 mm
ii)	Grog			
	a) Surface	Nil	1 up to 0.8 mm	3 up to 1.0 mm
	b) Bottom	2 up to 0.8 mm	4 up to 1.0 mm	6 up to 1.0 mm
iii)	Iron specks and colour specks on glaze/body			
	a) White glaze	1 up to 1.0 mm	2 up to 1.0 mm	4 up to 1.5 mm
	b) Colour glaze	3 up to 1.0 mm	4 up to 1.5 mm	6 up to 1.5 mm
iv)	Clay particles			
	a) Surface	1 up to 2.0 mm	3 up to 2.0 mm	4 up to 3.0 mm
	b) Handle	4 up to 1.0 mm	6 up to 1.0 mm	8 up to 1.0 mm
v)	Cracks, lengthwise			
	a) Surface	Nil	Nil	2 up to 2.0 mm
	b) Bottom	1 up to 0.8 mm (thickness 10 percent of the thickness of the item)	2 up to 1.0 mm (thickness 15 percent of the thickness of the item)	3 up to 2.0 mm (thickness 20 percent of the thickness of the item)
	c) Handle	Nil	10 percent of the total area between body and handle joining portion and up to 1 mm depth.	20 percent of the total area between body and handle joining portion and up to 1 mm depth
vi)	Handle replacement	5 percent as per design	10 percent as per design	20 percent as per design
vii)	Chips			
	a) Rim	Nil	Nil	2 up to 0.8 mm
	b) Bottom	1 up to 0.8 mm	2 up to 0.8 mm	3 up to 1.0 mm
viii)	Uneven glaze			
	a) White	Nil	Nil	5 percent
	b) Colour	10 percent	15 percent	20 percent
ix)	Glaze cut			
	a) Surface	Nil	1 up to 2.0 mm	3 up to 3.0 mm
	b) Bottom	1 up to 3.0 mm	2 up to 3.0 mm	4 up to 3.0 mm
x)	Off glaze			
	a) Rim	1 up to 0.5 mm	2 up to 0.5 mm	3 up to 0.5 mm
	b) Surface	2 up to 0.5 mm	3 up to 0.5 mm	4 up to 0.5 mm
	c) Bottom	3 up to 1.0 mm	4 up to 1.0 mm	6 up to 1.0 mm
xi)	Blister	Nil	2 up to 3.0 mm	4 up to 3.0 mm
xii)	Droper	1 up to 3.0 mm	2 up to 3.0 mm	4 up to 3.0 mm
xiii)	Glaze grinding mark	1 up to 0.8 mm	2 up to 1.0 mm	2 up to 2.0 mm
xiv)	Scuming	Nil	Nil	Nil
xv)	Loss of sound	Nil	Nil	Nil
xvi)	Decoration	Nil	10 percent	30 percent
xvii)	Burning decoration	Nil	Nil	10 percent
xviii)	Off decoration	Nil	Nil	15 percent

\* Not more than four in a cluster.

**ANNEX B***(Foreword)***COMMITTEE COMPOSITION****Ceramicware Sectional Committee, CHD 9**

<i>Organization</i>	<i>Representative(s)</i>
Central Glass & Ceramic Research Institute, Ahmedabad	DR K. N. MAITI ( <i>Chairman</i> )
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Bharat Heavy Electricals Limited, Bangalore	SHRI A. M. VAIDYA SHRI B. N. SHIVANANDA ( <i>Alternate</i> )
Central Glass & Ceramic Research Institute, Kolkata	SHRI S. CHAKRABARTI
Chemicals & Allied Products Export Promotion Council, Kolkata	SHRI B. D. KOTHARI SHRI VED KAPOOR ( <i>Alternate</i> )
Controller of Quality Assurance, Kanpur	SHRI A. K. BANDYOPADHYAY SHRI R. M. GAUTAM ( <i>Alternate</i> )
Development Commissioner (SSI), New Delhi	SHRI S. K. KAPOOR SHRI A. S. SOOD ( <i>Alternate</i> )
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Hotel & Restaurant Association of India, New Delhi	SHRIMATI MALINI RAJENDRAN
Indian Institute of Ceramics, Kolkata	DR S DASGUPTA Ms. RITU PARNA SEN ( <i>Alternate</i> )
Industries Commissioner, Government of Gujarat, Gandhi Nagar	SHRI R. J. SHAH
Madhusudan Ceramics Ltd, Mehsana	SHRI G. K. LOYA SHRI S. K. GHATAK ( <i>Alternate</i> )
Ministry of Industry, Department of Industrial Development, New Delhi	SHRI P. K. JAIN DR K. R. MURTY ( <i>Alternate</i> )
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Porcelain Enameller's Association, Kolkata	SHRI B. S. GANGULI SHRI N. ROY ( <i>Alternate</i> )
Rajasthan State Mineral Development Corporation Limited, Jaipur	SHRI S. K. PATNI
Research, Designs & Standards Organization, Lucknow	DSC (Stds) DSC-SS
West Bengal Ceramic Development Corporation Limited, Kolkata	SHRI A. K. ROY SHRI TAPAS DUTTA ( <i>Alternate</i> )
Welcome Group, Maurya Sheraton Hotel, New Delhi	Representative SHRI S. K. CHAUDHURI
BIS Directorate General	Director & Head (Chem) [Representing Director General ( <i>Ex-officio</i> )]

*Member Secretary*  
SHRI N.K. BANSAL  
Joint Director (Chemical), BIS

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This Indian Standard has been developed from Doc : No. CHD 9 (926).

**Amendments Issued Since Publication**

Amend No.	Date of Issue	Text Affected

**BUREAU OF INDIAN STANDARDS**

**Headquarters :**

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110 002  
Telephones : 323 01 31, 323 33 75, 323 94 02

Telegrams : Manaksanstha  
(Common to all offices)

**Regional Offices :**

Central	: Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110 002	{ 323 76 17 323 38 41
Eastern	: 1/14 C.I.T. Scheme VII M, V. I. P. Road, Kankurgachi KOLKATA 700 054	{ 337 84 99, 337 85 61 337 86 26, 337 91 20
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